



**Directorate of
Intelligence**

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Registry

Science and Weapons Daily Review

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Science and Weapons Daily Review

USSR: FIRE DISABLES PARTICLE ACCELERATOR [REDACTED]

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[REDACTED] a fire swept through the control center of the VEPP-4 electron-positron accelerator/storage-ring at the Novosibirsk Institute of Nuclear Physics (IYaF) on 8 August 1985. The fire did 10 to 15 million rubles worth of damage and will keep the accelerator out of commission for an extended period. The person in charge of monitoring the accelerator apparently was drunk and died in the fire, along with a group of firefighters. [REDACTED]

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Comment:

The damage to the VEPP-4 accelerator deals a serious blow to high-energy physics research at IYaF, a major Soviet experimental center. VEPP-4 is a key facility for studying particle beam interactions, free-electron lasers, and synchrotron radiation. The VEPP-4 facility at Novosibirsk is a 5-billion-electron-volt electron-positron collider with a ring circumference of 360 meters. It is the newest and largest of several storage-ring and colliding-beam devices at IYaF. VEPP-4 went into operation in 1979, but was scheduled to receive major improvements and upgrades during 1985. These improvements already were fully funded. [REDACTED]

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Although we do not know the precise extent of the fire damage to VEPP-4, we estimate that the accelerator will be out of service for at least one year, and perhaps much longer. Depending on the severity of the damage, the Soviets may choose to build an entirely new, more powerful storage ring instead of refurbishing the old one. 

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Rings such as VEPP-4 are useful for fundamental studies of the free-electron laser mechanism, although the low beam currents of electron storage rings seriously restrict the peak laser output power. VEPP-4 also was used as a source of synchrotron radiation for materials-science research and X-ray lithography--full-time for 40 days per year, and part-time the remainder of the year. Other studies at VEPP-4 included trace element analysis, scanning microscopy, and experimental work on very-large-scale integrated circuit fabrication. 

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